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Research report

Examining evidence for behavioural mimicry of parental eating by adolescent females. An observational study ☆

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ABSTRACT

Behavioural mimicry is a potential mechanism explaining why adolescents appear to be influenced by their parents' eating behaviour. In the current study we examined whether there is evidence that adolescent females mimic their parents when eating. Videos of thirty-eight parent and female adolescent dyads eating a lunchtime meal together were examined. We tested whether a parent placing a food item into their mouth was associated with an increased likelihood that their adolescent child would place any food item (non-specific mimicry) or the same item (specific mimicry) in their mouth at three different time frames, namely, during the same second or within the next fifteen seconds (+15), five seconds (+5) or two second (+2) period. Parents and adolescents' overall food intake was positively correlated, whereby a parent eating a larger amount of food was associated with the adolescent eating a larger meal. Across all of the three time frames adolescents were more likely to place a food item in their mouth if their parent had recently placed that same food item in their mouth (specific food item mimicry); however, there was no evidence of non-specific mimicry. This observational study suggests that when eating in a social context there is evidence that adolescent females may mimic their parental eating behaviour, selecting and eating more of a food item if their parent has just started to eat that food.

Introduction

Social context has been shown to have a strong influence on eating behaviour (Goldman, Herman, & Polivy, 1991; Herman, Roth, & Polivy, 2003). Social modelling research has shown that the eating behaviour of adults and children can be influenced by the amount of food other diners are eating; eating more when others are eating more, and less when they are eating less (Bevelander, Anschutz, & Engels, 2012; Hermans, Larsen, Herman, & Engels, 2009). A variety of potential explanations of these effects have been suggested. For example, modelling may occur because the behaviour of one's peers sets a norm of what constitutes a socially appropriate amount to eat (Herman et al., 2003; Vartanian, Sokol, Herman, & Polivy, 2013), or because it acts as an informational cue to guide behaviour (Robinson, Benwell, & Higgs, 2013).

Parents are thought to be one of the most important social influences on child and adolescent eating behaviour (Salvy, Elmo, Nitecki, Kluczynski, & Roemmich, 2011), influencing health beliefs, behaviours and dietary intake (Lau, Quadrel, & Hartman, 1990; Oliveria et al., 1992). Moreover, parental and child food consumption tend to be correlated in terms of the type and amounts of food that both eat (McGowan, Croker, Wardle, & Cooke, 2012; Sweetman, McGowan, Croker, & Cooke, 2011; Wroten, O'Neil, Stuff, Liu, & Nicklas, 2012). Likewise, research has shown that children are more likely to try a food if they observe their parent eating that same food (Harper & Sanders, 1975). More recent research has also shown, in an experimental setting, that the presence of a parent shapes the amount and types of food adolescents eat (Salvy et al., 2011). However, the mechanisms underlying the processes by which adolescents adapt their eating to match parental behaviour when eating has received less attention.

One possibility is that adolescents mimic or synchronise to their parents' eating behaviour when dining together. Behavioural mimicry refers to the process whereby a person imitates the behaviour of another person without conscious awareness. This is thought to occur due to a tight neural link between perception and action (Chartrand & Bargh, 1999; Chartrand, Maddux, & Lakin, 2009), such that observing

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another person's movements may trigger one's own motor system to perform that same movement (Iacoboni et al., 1999; Lakin & Chartrand, 2003), e.g. taking a bite of food. Mimicry has been suggested to occur for a number of behaviours (Bernieri, 1988; Larsen, Engels, Souren, Overbeek, & Granic, 2010; Neumann & Strack, 2000) and more recently the role of behavioural mimicry in social eating contexts has been examined. Hermans et al. (2012) found that when two female adults ate the same meal together, participants were more likely to pick up and eat the food if their eating partner had done so in the preceeding five seconds. Similarly, Bevelander, Lichtwarck-Aschoff, Anschutz, Hermans, and Engels (2013) found that when a young child (aged 6–11) picked up and ate a chocolate-covered peanut, this was associated with an increased likelihood that their eating partner would subsequently pick up and eat that food. Thus, previous studies have only investigated behavioural mimicry in child-only or adult-only groupings (Bevelander et al., 2013; Hermans et al., 2012). Since research supports that adolescents' eating behaviour may be affected by the eating behaviour of a present parent (Salvy et al., 2011), it will be important to understand whether mimicry of eating behaviour may occur between a parent and an adolescent. It may be the case that mimicry of parental eating is a mechanism explaining parental influence on adolescent eating behaviour.

In studies to date examining behavioural mimicry during social eating, participants have only been provided with a single food item to eat (Bevelander et al., 2013; Hermans et al., 2012). From these studies it is, therefore, not possible to infer whether participants were mimicking eating of a specific food type (if you take food x, I then take food x) or whether participants were simply synchronising the rate of their food intake in a more general/non-specific manner. For example, it may be that watching another person pick up a food item triggers an automatic reaction to reach for any food item (non-specific food item mimicry) or only the same food item (specific food item mimicry). Differentiating between these two possibilities is of importance because it may signal mechanisms that underlie mimicry. If automatic synchrony of gestures is of importance (Hermans et al., 2012; Iacoboni, Woods, Brass, Bekkering, & Mazzoitta, 1999) then we may expect to see evidence for non-specific mimicry, because mimicry of the action of eating is key. Conversely, if mimicry occurs because an eating partner sets a norm about which foods are and are not appropriate to eat (Herman et al., 2003; Vartanian et al., 2013), then only mimicry of congruent food items may be observed. These questions are also of importance because in naturalistic social eating contexts such as family meal times, a variety of food items are likely to be available.

In the present study, we aimed to examine whether there is evidence that female adolescents mimic the eating behaviour of their parents when eating together. In order to assess mimicry, videos of parent–adolescent dyads eating a multi-item lunchtime meal were examined. We examined whether there was evidence of both 'non-specific food item mimicry' and 'specific food item mimicry'. Based on previous studies of eating mimicry (Bevelander et al., 2013; Hermans et al., 2012), it was hypothesised that a parent placing a food item in their mouth would be associated with an increased likelihood that their female adolescent child would also place a food item in their mouth. However, we reasoned that if evidence of mimicry was observed, it may only be food item specific, as parental behaviour during a meal may primarily signal which foods are appropriate to eat and when.

Method

Background

The videos analyzed were of adolescents and parents eating a multi-item lunchtime meal together, which were recorded as part of a test day for a larger study examining brain activations and responsiveness to food cues. In the larger study, participants arrived at the laboratory on the morning of their test day where they underwent an MRI scanning session, which was followed by a multi-item lunch. Participants were aware that their lunch time meal would be video-recorded. However, participants were not explicitly told that their food intake would be measured or that mimicry would be later examined. Three groups of participants were recruited as part of the larger study: adolescents with type 2 diabetes, overweight and obese adolescents (without type 2 diabetes), and healthy weight adolescents (without type 2 diabetes). See Appendix: Supplementary material for more detailed information about the selection criteria for the larger study.

Participants

From the original data collected, we were unable to use ten videos due to equipment failure or error. A further video was excluded because the adolescent participant did not eat anything. In addition, we opted to focus on female adolescents only, due to the consistency of which social influence effects have been replicated amongst females (Hermans et al., 2012; Pliner & Mann, 2004; Roth, Herman, Polivy, & Pliner, 2001), and there being only a small number of videos of adolescent males available. Therefore, nine videos of adolescent males were not coded or analyzed. Thus, the total sample for the present research consisted of 38 dyads containing female adolescents eating with a parent. See Table 1 for sample ethnicity and socio-economic status. There were 33 female parents and 5 male parents. The adolescents were aged 12.0–18.8 years, with a mean age of 15.4 years, SD = 1.9. Adolescent weight categories were classified according to the defined International Obesity Task Force age specific cut-offs (Cole, Bellizzi, Flegal, & Dietz, 2000; Cole, Flegal, Nicholls, & Jackson, 2007). Eleven of the adolescents were classed as being in the healthy weight range (BMI 18.5–24.9), fourteen were classed as overweight and obese (BMI ≥ 25) and thirteen had type 2 diabetes (BMI = 17.3–57.1). For the total sample mean adolescent BMI = 30.6, SD = 9.7, and mean parental BMI = 30.1, SD = 5.8. See Table 2 for adolescent and parental BMI information for the healthy weight, overweight and obese, and diabetic groups separately.

For our planned analyses we did not have any hypotheses relating to whether the weight or diabetes status of adolescent participants would moderate or influence any tendency to mimic parental eating. This is because social influence on food intake has been shown to be a relatively consistent effect and has been ob-

Table 1
Demographic information of sample.

Demographics	Parent n = 38	Adolescent n = 38
Ethnicity		
White	50%	55.3%
Asian	39.5%	36.8%
Black	5.3%	2.6%
Chinese	2.6%	2.6%
Other/Mixed	2.6%	2.6%
Income*		
<£15,000	41.7%	n/a
£15,000–60,000	44.4%	n/a
>£60,000	13.9%	n/a
Education level		
Secondary school	21.10%	n/a
GCSE	28.90%	n/a
A-level/College	26.30%	n/a
University		
Graduate	7.90%	n/a
Post-graduate	15.80%	n/a

* n = 36 for income, information not available for 2 parents.